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PUTS THREE MORE VOLCANOES ON MAP OF U. S. POSSESSIONS

Three more volcanoes have been added to the map of American territory, and two of the new craters rank with the giants among the fire-mountains of the world. How he explored these hitherto unknown mountains was told before a recent chapter meeting of the Society of the Sigma Xi by R. H. Sargent, topographic engineer of the U. S. Geological Survey.

The newly mapped volcanoes lie in the Aleutian peninsula, the long tongue that juts out from the mainland of Alaska, between the Bering Sea and the Pacific ocean. This strip of land, which contains more active and extinct volcanoes than all the rest of North America, has as yet been very little explored.

The first of the volcanoes mapped by Mr. Sargent was a peak that had been known at a distance for some years; but it had not been learned that it was a volcano. The Geological Survey party travelled by pack train entirely around its base, a total distance of one hundred miles, mapping the slopes as they went. They ascended to the rim, the highest point of which has an altitude of 4200 feet, and investigated the immense crater, six and one-fourth miles in diameter. The volcano is apparently quite extinct, for at the bottom, in addition to one large secondary cone andseveral smaller ones, is a lake of considerable size. The waters of this lake break through a gap in the wall of the mountain and form the Aniakchak river, from which the mountain has been named Aniakchak Crater.

The second volcano discovered by Mr. Sargent lies to the west of Aniakchak Crater, and was named Purple Crater because of its peculiar color. It is the smallest volcano of the three, andis of interest chiefly for a great central mass or plug of basalt that chokes it up.

The third mountain is another giant, 6000 feet high, with a crater five miles across. It shows signs of having been active in recent times, and a record dated 1892 states that a distant and then unvisited peak, which apparently is the same mountain, was seen smoking. If it should stage a really major eruption it would probably be a terrific one, for the whole vast bowl is filled with a mass of ice and snow, through which a black secondary cone projects at one place. This frozen sea inside the crater feeds at least nine large glaciers that creep down the sides of the mountain. The Russians had seen this mountain at a distance andhad given it the name of Weniaminoff, which will probably be retained on the new maps.

Mr. Sargent stated that any one who likes to rough it in unexplored country, even if not interested in geology or any other science, would find the mountains of

the Aleutian peninsula a happy hunting ground. "It is relatively easy to get into," he said, "and fairly swarms with game. We saw fifty-two big brown bears and cari-- bou innumerable, and the streams are alive with fish."

EXPERTS FIGHT FISH EPIDEMICS

There are fish epidemics as well as human epidemics. Really serious ones due to a tiny parasite rejoicing in the name. Ichthyophthirius multifilius, have occurred from time to time in France, Germany, Holland and in various parts of the United States. This parasite attacks fresh water fish both in their natural environment andin aquaria with a resulting loss running into hundreds of dollars.

In a recent paper H. F. Prytherch, of the U. S. Bureau of Fisheries, describes various methods of controlling this disease in hatcheries, fish farms and all places where fish are kept in artificial confinement. To make clear how this problem can be attacked, he says, it is first necessary to understand something of the life history of the parasite.

The young Ichthyophthirius, according to Mr. Prytherch, goes through a free swimming stage during which it wanders around through the water in search of a host. On coming in contact with a fish it burrows into some unscaled part, especially preferring the gills or fins. Once embedded in the fish's skin it grows rapidly from the nourishment it absorbs from the tissues and soon shows on the outside as a small white spot. Badly infected fish are covered with these "polka dots" all over their bodies.

In a few days this white body leaves the fish and sinks to the bottom where it shortly undergoes a transformation into a hard shelled reproductive cyst. When reproduction is complete the cyst wall bursts and releases hundreds of young parasites of the free-swimming stage.

Mr. Prytherch states, "There are two general methods for treating the disease --first, by killing the parasites while they are attached to the fish, and, second, by destroying them after they leave the fish and are free--swimming in the water. The first general method can be used to hold the disease in check but will not completely wipe it out."

The logical time to begin treatment, he continues, is when the first symptoms of the disease appear and the whole fight in controlling the disease should be directed against reinfection.

Direct application of alum sulphate has been found most efficacious in ridding the fish of the parasites. The healing action of the alum leaves the "patient" in a less weakened condition than any of the variousother chemicals tried so far for this purpose.

The second method which attacks the adult parasite after it has left the fish is more successful and should be utilized, says Mr. Prytherch, wherever possible. It consists simply in placingthe fish in swiftly running water where the parasites will be carried away before reproduction can take place. The overflow should be

carried off both at the top and the bottom to take care of any that do not fall directly to the bottom. Infected fish, in warm weather, it is stated, may be cured in this way in a week or ten days and further epidemics prevented by quarantining new stock in running water. In some instances swiftly flowing streams may be fenced off and used for this purpose by leaving the fish in the enclosure until cured.

Tadpoles and goldfish kept in tanks with fishes subject to this disease have been found extremely helpful in keeping it down since they prey on the parasites for food.

NERVE CURRENTS HEARD ON RADIO INSTRUMENT

The electric current that shoots along a nerve fiber has been detected by means of radio apparatus, according to Dr. E. D. Adrian of Cambridge University, who described before a meeting of the Physiological Society his method of using a three-tube instrument to make his delicate measurements.

It had long been known, he said, that the passing of messages down a nerve caused an electrical disturbance. But it had only been possible to record the effects from a large number of fibers at once, for example, the thousands of fibers from an eye, or to a muscle. The results obtained were therefore as confused as would be the superimposed records from all the telegraph wires between London and Manchester. Dr. Adrian's new apparatus makes itpossible for the first time to obtain records in a rapidly moving photographic plate of the impulses passing along a single fiber.

In conjunction with Dr. Zottermann, a Norwegian neurologist, Dr. Adrian recorded the results of stimulating a sense organ connected to the brain by a single fiber. The sense organs in the skin which give information as to touch, pain, and temperature, are too near together for this to be easy. Those in the muscles subserving the so-called muscular sense are farther apart, and by stretching a frog's muscle, it was found possible to stimulate a single one. The impulses were all of the same size, but as the muscle was stretched, their frequency was increased from ten to fifty per second. Differences of intensity are in fact transmitted through the nerves as differences of rhythm.

This is the first occasion on which the message passing along a nerve has been decoded, and the experiment opens up a new field of neurology, in the opinion of physiologists here. Within the next few years it should be possible to read the main types of messages entering and leaving thenervous system, and the time has been brought measurably nearer when it will be possible to record the actual events in the brain which are the physical correlate of consciousness.

Black opals are becoming rare.

ELEMENTS CHANGE WHEN SHOT WITH ATOMIC BULLETS

How nitrogen can be changed to fluorine andthen to hydrogen and oxygen when hit by the rapidly moving nucleus of an atom of helium was described to the National Academy of Sciences by Dr. William D. Harkins, of the University of Chicago, who has even succeeded in photographing the changes.

In a closed chamber containing very moist air, the moving atoms are not visible, but they have theproperty of condensing the water vapor along their path into a long narrow cloud, so that their path can be traced andwhen one atom hits another, a forked line is seen, due to the fact that they rebound. This process was invented by Prof. C. T. R. Wilson, of Cambridge University, England.

"A photograph taken by this method indicates that a fast helium nucleus strikes the nucleus of a nitrogen atom, possibly forming the nucleus of a fluorine atom," said Dr. Harkins. "This almost immediately explodes to give a fast hydrogen nucleus and the nucleus of an oxygen atom."

Efforts to convert mercury to gold were unsuccessful, Dr. Harkins said. "An X-ray tube was used to shoot electrons at 138,000 to 145,000 volts into mercury," he stated. "If any one of these electrons were to add itself to the nucleus of a mercury atom, without driving out another particle, an atom of gold would be formed. We found that if any electrons attach themselves in such a way, less than one in a billion does so, since no trace of gold was found in the mercury bombarded."

PALESTINE EXCAVATORS FIND MAGIC FLOWER POT

By E. N. Fallaize,
Secretary of the Royal Anthropological Institute, London.

An interesting discovery has just been made in one of the Canaanite Temples at Beisan in Palestine, now being excavated by the Expedition of the University of Pennsylvania Museum, which, if correctly interpreted, throws fresh light on some of the religious and maginal practices of the early inhabitants of Biblical lands. In one of the two temples belonging to the reign of Amenhotep III, or Amenhotep IV, when this part of the country was under the rule of the Egyptians, has been found a hollow circular ring of clay, to the upper part of which are attached cups and animals' heads. At the base of the cups are holes connecting with the hollow part of the clay ring.

Mr. Allan Rowe, field director of the Expedition, suggests that this is a flower vase such as the classical writers mention as having been used in the temples of the great Syrian goddess whose rites were closely connected with nature and with fertility in all living things. Mr. Rowe has pointed out that a similar object was found at Megiddo some years ago and anothermuch later in date in a temple of Aphrodite at Naukratis in Egypt, and suggests that they may actually be "The Gardens of Adonis" to which classical writers refer in connection with the religious practices of ancient Greece and the Near East.

The "Gardens of Adonis" were baskets or pots in which various seeds or grain were planted and tended by the women for a period of eight days, after which they were thrown into a river or stream with an image of the god. Sir James Frazer, who has collected a large number of similar customs in his "Golden Bough", suggests that this custom was a charm to secure a plentiful supply of rain or water for irrigation to promote the growth of the crops.

A similar purpose underlay theharvest custom in England and other European countries in which those who brought homethelast load of the harvest, or sometimes the last sheaf of corn, were drenched with water when they reached the farmyard. If the practice were omitted there would be a deficiency of rains in the coming year. In the parts of the east of Asia where the staple crop was rice, the fertility of the fields and theprosperity of the crop dependedupon the care with which a small plot of rice plants was tended and of which the produce had to be mixed with the seed used in the following year. In Sardinia pots of plants were sometimes placed in the windows of the houses with a similar intention and their resemblance to the Syrian custom was made more marked in that little figures, male or female, were placed in these pots, but this feature of the custom was firmly forbidden by the Church, suggesting that it was thought to beasurvival from pagan times.

SCIENCE SOLVES PROBLEM OF TARDY WORKMEN

Four thousand employees in a big refining plant in Philadelphia may chant, "Oh, how I hate to get up in the morning," but most of them get up while chanting. For the factory has made a scientific study of the lateness of its workers and as a result tardiness has been cut almost in half.

Ralph E. Motley, who surveyed the plant andfound the remedy, says that the lateness of employees is a cause of much expense to companies, and that the cure for the situation can be found only after a satisfactory diagnosis of causes has been made.

In his report on the Philadelphia refinery, which will be published in a forthcoming issue of the Journal of Personnel Research, Mr. Motley says that in 1921 there was an average of nine persons per thousandlate to work every day. Traffic delays sometimes held up street cars, and only about one-fifth of the workers lived within walking distance of the plant.

"But some of the workers had the 'lateness bug' in their systems," says Mr. Motley, "and took long chances on reaching the plant on time, while others had gradually acquired thehabit of reporting late simply for the reason that little determined effort had been made by the management to curb the increasing tardiness."

The first remedy tried was deducting onehalf hour's pay from the envelope of the man who reported late for work. This proved only a temporary remedy, for the workers soon became accustomed to this slight penalty andpaid no attention to it.

The most successful plan was to report regularly to the superintendent of each department of the plant the names of those men in his department who were late each

day. Then a monthly report was sent to each superintendent showing the names of those men who were late three or more times within the month. And if an employee was late five times in a month for three months, or eight times a month for two months he was subject to dismissal unless he showed marked improvement. Competition between departments for bettering records was aroused, and during 1925 the rate of lateness was cut to five persons per thousand each day.

There is a seasonal trend in tardiness, Mr. Motley finds, December being the record breaking month for lateness, and March showing the fewest cases of tardiness.

LITTLE KNOWN ALASKAN ISLANDS TO BE SCIENTIFICALLY EXPLORED

The Aleutian Islands, a string of thirty or more volcanic peaks rising above the surface of the sea and forming a chain of stepping stones between Alaska and the northeastern corner of Siberia, are at last to be systematically explored by scientists. Hitherto they have remained almost as unknown as they were when the United States purchased Alaska from Russia, but at the annual meeting of the American Geophysical Union preliminary steps were decided upon that are expected to unlock their secrets.

Many scientific agencies are interested in the Aleutians: the U. S. Geological Survey and the Geophysical Laboratory of the Carnegie Institution of Washington in the volcanoes, the U. S. Department of Agriculture in climate, soils, forests, and wild animals, the Coast and Geodetic Survey in the accurate charting and mapping of the land and water areas, the Army and Navy in their relation to the national defense. These and other institutions expect to cooperate for a considerable number of years to come in obtaining andmaking available accurate information about this little known territory.

COWS MAY BE SAVED BY NEW VACCINE

Thousands of dollars may be saved to cattle breeders if experiments being carried out at the Michigan State Agricultural College prove successful. Prevention of premature calving in cattle, responsible for large losses annually, is being sought by scientists with vaccination. This condition is caused by infection from a specific bacteria, hence the possibility of combatting the disease by inoculation.

Dr. I. Forest Huddleson of thebacteriological section of the State Agricultural College has been conducting a series of experimental inoculations of cattle to determine if this method can be successfully used as a preventive. The idea is much the same, according to Dr. Huddleson, as thatof smallpox vaccination. It is necessary to evolve a strain of the causative organism so weakened that it will not cause harmful effects but will still stimulate the production of enough antitoxins to confer future immunity to the disease.

He has found that the cattle he has inoculated have attained a certain degree of immunity and it is hoped that further research will develop a strain of bacteria that will confer complete immunity.

TROPICAL ORIOLES COOPERATIVELY POLYGAMOUS

An island midway between the Atlantic and Pacific in the center of the Panama Canal is the unique location of a laboratory of tropical research. The scientists in charge, while living in the heart of a primeval tropical forest, enjoy the comfort of modern shower baths and ice delivered three times a week by passing steamers, Dr. Frank Chapman, ornithologist of the American Museum of Natural History, New York, reported to the National Academy of Sciences.

While four different kinds of monkeys roar defiance at the airplanes traveling over head, these scientists on the island of Barro Colorado, have ascertained many new facts about tropical bird and animal life. Prominent among the pictures of tropical fauna secured by Dr. Chapman was that of a tree containing forty nests of a species of oriole, observations upon the life of which he said had revealed a condition of more or less harmoniously worked out cooperative polygamy.

EARTHQUAKES AND METEORS REVEAL EARTH'S COMPOSITION

Studies of earthquakes, meteors which hit the earth from outer space, and the atmosphere of the sun, all contribute to knowledge of the earth's composition, according to Dr. Henry S. Washington, of the Carnegie Institution of Washington, who spoke before the American Geophysical Union recently.

"We are almost certain that the earth consists of a core of metallic nickel-iron, which changes, into outer silicate shells, the thickness and mass of which can be approximately estimated," he said.

"Fromthese data, we can calculate the chemical composition of the earth as a whole. The whole earth is composed mostly of the following elements; iron, about 40 per cent. (about 32 per cent. being in the metallic central core); oxygen, about 28 per cent; silicon, about 15 per cent; magnesium, about 9 per cent; with smaller amounts of nickel, calcium, aluminum, and sulphur; these make up about 98 per cent. of the earth, the other 84 elements making up the remaining 2 per cent.

"The order of abundance of the chief elements in the sun's atmosphere is in general like that in the earth, indicating that the earth originated from the outer part of the mass of matter that eventually condensed as the sun. The average composition of all meteorites is much like that of the whole earth and of the sun's atmosphere."

Some astronomers have believed that Saturn and Uranus are very hot, but measurements show that Saturn's temperature is about 240 degrees below zero Fahrenheit, and Uranus is 275 degrees below.

TRAINED SNAIL COMES TO TRAGIC END

The snail, proverbially the slowest of all creatures at getting anywhere in the world, has at last bestirred himself enough to make scientific history.

A number of land snails, found roaming about the University of Denver campus, have been captured by psychologists at the university and put through tests designed to show whether or not such creatures can be taught anything, and if so, why.

Results of the experiment which was conducted by Dr. Thomas R. Garth and Miss Mary P. Mitchell of the psychology department, are reported in a recent issue of the Journal of Comparative Psychology. The captive snails were put one by one in a runway shaped like a T and made of plate glass. The snail was started at the bottom of the stem of the T. When he crawled to the cross piece he would have to decide whether to turn right or left. If he chose the left turn, he received a slight electric shock, whereas if he turned to the right he was rewarded by a period of peaceful rest in a dark box. The patient experimenters timed each snail with a stop watch and counted the errors when a wrong turn was made at the crossroad.

The most promising snail of the collection was trained over 43 days, making two to six "runs" a day and resting on Saturday andSunday. This snail sometimes took over an hour to cover the distance but after the thirteenth day he never gave up once and after the fifty-sixth trip made only one error. Gradually he even acquired speed - relatively speaking. At this point an unfortunate accident occurred, but not before the prize snail had made a name for himself in the annals of camparative psychology.

EARTH MADE OF METEOR MATERIAL

The earth is largely just the same as meteorites, our only importations from outer space. In experiments at the Geophysical Laboratory of the Carnegie Institution of Washington that simulate the conditions of extremely high temperature and pressure of the earth's interior, Dr. Leason H. Adams and Dr. Ralph E. Gibson have found that rocks have much more elasticity than was formerly supposed.

In a report to the National Academy of Sciences Dr. Adams said that they had found that the least silicous of the silicate rocks, known in geological parlance as Dunite, when subjected to very high pressures was three fourths as rigid as steel. The calculations of the two experimenters have been found to tally with seismological data which definitely establishes that the main part of the earth consists of peridotitic rock or the stuff that meteors are made of.

The saying that if a case of shingles encircles the body of a patient he is sure to die is without foundation, since the disease follows the course of a nerve, and no nerve completely circles the body.

EARTH SAID TO HAVE SOLID CORE

The center of the earth is composed of very heavy materials, possibly metallic iron, Dr. Paul R. Heyl, of the United States Bureau of Standards, told the American Geophysical Union recently. He bases his conclusion upon determinations which he has been making of the density of the earth, which he finds to be about five and a half times that of water. As the average density of the rocks in the earth's crust is only two and a half times that of water, the center must be of much greater density.

This view was supported by the statements of Robert B. Sosman, of the Geophysical Laboratory of the Carnegie Institution of Washington. Mr. Sosman has studied the passage of waves from earthquakes through the earth. These studies have established with reasonable certainty, he said, "that the earth is a solid object without any very extensive liquid layers within it. It contains a core about 2200 miles in radius. This core reflects and refracts as if it had a clearly marked surface, and is capable of transmitting elastic waves, but at a speed which is much less than the speed in the overlying material."

AIR CAME FROM ABSORBED GASES IN ROCKS, SAYS PHYSICIST

That the waters of the ocean, and the air around the earth, came out of the rocks was the idea suggested to the American Geophysical Union at its recent meeting, by Dr. W. J. Humphreys of the U. S. Weather Bureau.

Dr. Humphreys bases his suggestion on the theory, now widely held, that the earth was originally part of the sun and that it was pulled out of it by the passage of a larger star close by, due to gravitational attraction. In this case, he says, the hydrogen, nitrogen and oxygen to form the ocean and the atmosphere of the earth, were pulled from the outer layer of the sun, as well as the heavier elements. "Presumably," he says, "most of the mass of the earth collected into a liquid nucleus great enough to retain by gravity all the elements of the air, including water vapor, except hydrogen andhelium.

"In a comparatively short time this nucleus cooled sufficiently to form a more or less stable crust, after which it soon became cool enough to permit the greater part of the water vapor, if it existed in large quantity, to condense. At this lower temperature the earth could also retain both hydrogen and helium.

"The thickening of the crust must have been accompanied with innumerable eruptions and lava flows, all giving off then, as they do today, water vapor, hydrogen, nitrogen, oxygen and carbon dioxide, previously absorbed by the rocky material when liquid or gaseous. In this way the primordial water vapor and the fixed gases of the air, however great or small in amount, were supplemented from within the earth until an atmosphere substantially as now exists was formed, and the oceans covered most of the earth."

Over one-third of this years' graduating class of Wellesley College expect to teach.

HIGH SCHOOL GIRLS BEST STUDENTS

High school girls collectively do not attain the heights of intelligence reached by high school boys, but the girls manage to get better grades in their studies. This is indicated by a survey of the careers of 262 students who completed the four year course in the Grover Cleveland High School in St. Louis.

Results of the study, just published, show that "boys who remain in high school to graduate clearly outrank the girls in ability to score on the Terman group test of mental ability," according to W. D. Shewman, who conducted the investigation.

The girls' superiority to the boys in achievement, as measured by teachers' marks, is taken by Mr. Shewman to mean that the girls evidently possess other qualities than intelligence which make them superior in meeting the demands made by the high school. He suggests that, from the evidence, high schools are now more adapted to suit the needs and interest of girls than of growing boys.

TABLOID BOOK REVIEW

PREPARATION OF SCIENTIFIC AND TECHNICAL PAPERS. By Sam F. Trelease and Emma Sarepta Yule. Baltimore: Williams and Wilkins Company. 1925. $1.50.

Printers in general, and typesetters in especial, are an independent and somewhat aggravating lot. They insist on setting up copy exactly as they get it, and if you don't have it properly prepared, with all the marks as they should be, that's your own hard luck. For which reason many a first-class scientific paper gets delayed, and messed up, and in the end costs the author more than it should, merely because though he knows the technique of his subject to the last jot and tittle he does not know the elements of the lore of the press and proof rooms that are necessary to make themechanical end of its presentation possible. Such sufferers and sinners (and we are all a little of both) will find this little manual a most valuable vade-mecum. It contains only 113 pages, including the index, yet it manages to condense into that space apparently every detail needed for the satisfactory preparation of scientific copy.

About 6,500 persons in this country were drowned last year.

An important discovery of potash has been made in New Mexico.

Most meteorites that strike the earth are made of nickel iron.